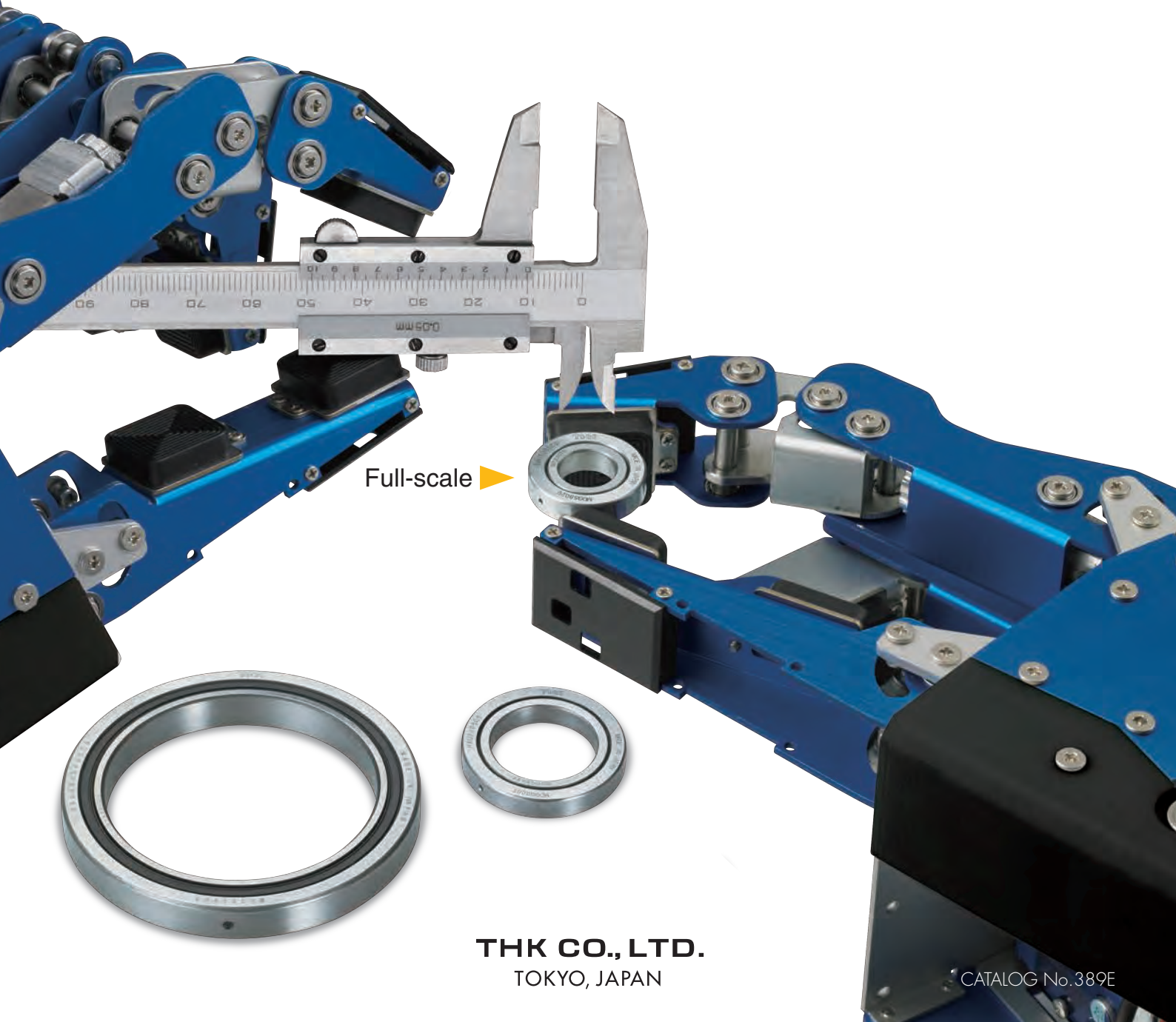


# Micro Cross-Roller Ring **RAU**

Inner diameter: **10<sub>mm</sub>** Outer diameter: **21<sub>mm</sub>**

For a compact and lightweight system

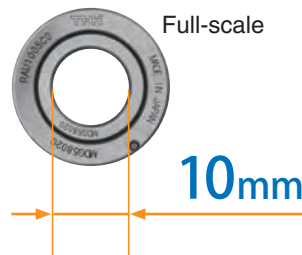


Full-scale 

# The all-new micro-size Cross-Roller Ring RAU achieves rotary motion in a compact package.



- **Micro Cross-Roller Ring** with inner diameter of 10 mm and outer diameter of 21 mm
- More **compact** than a conventional angular contact ball bearing
- Spacer retainer enables smooth movement and high rotation accuracy



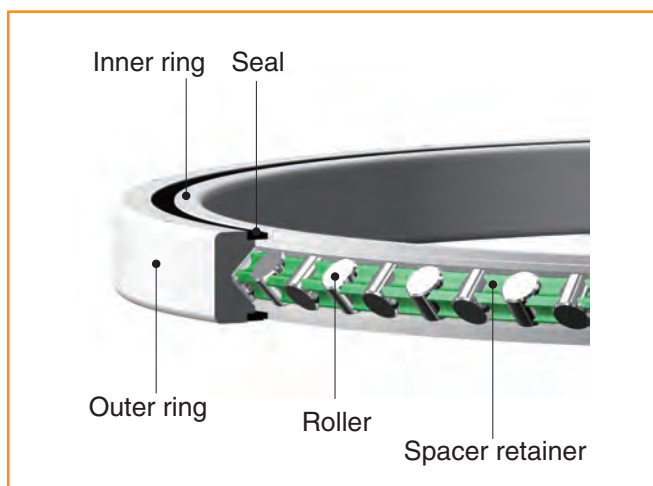
## Structure

In the RAU, the rollers travel on the V-shaped raceways ground into the inner and outer rings.

Alternating rollers are arrayed orthogonally so that one bearing can support loads and moments in any direction.

Also, because of the integrated structure, the RAU can be used for either inner ring or outer ring rotation.

Fig. 1 Structure of Cross Roller-Ring Model RAU

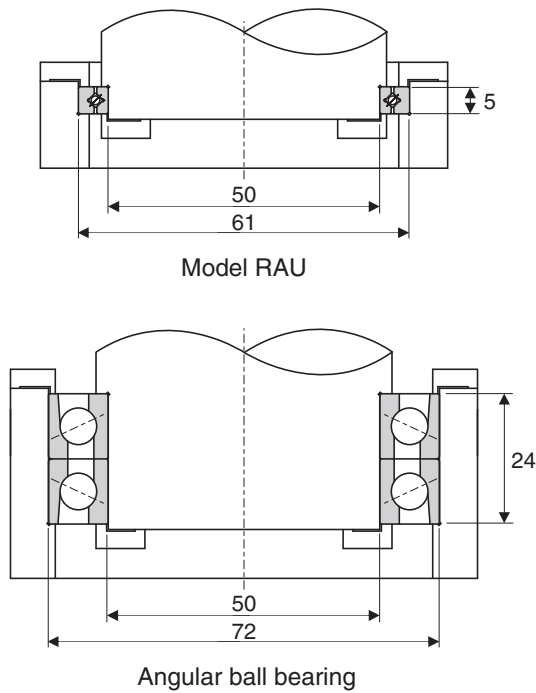


Cross-Roller Ring model RAU

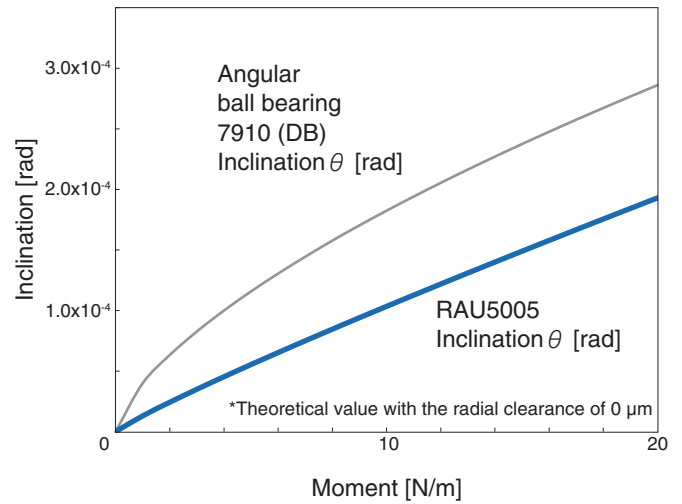
# 1. Compact and Rigid

The RAU is more compact and lighter weight than a double row angular contact ball bearing. It is also more rigid, even though it is made as compact as possible.

● Comparison, 50 mm inner diameter



Moment Rigidity Comparison



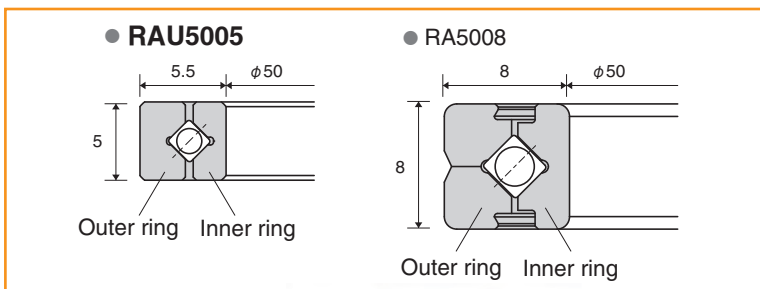
Comparison of cross-sectional area and mass

Model No.	RAU5005	7910 (DB)
Cross-sectional area	27.5mm <sup>2</sup>	264mm <sup>2</sup>
Mass	32g	260g

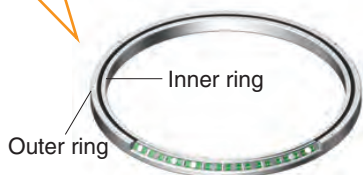
# 2. Light Weight

The cross-sectional area of the model RAU is 57% smaller than the Cross-Roller Ring model RA, which was previously the thinnest ever. This enables further weight reduction. The line-up also includes other models whose inner diameters are the smallest to date: 10, 15, 20, 30, and 40mm.

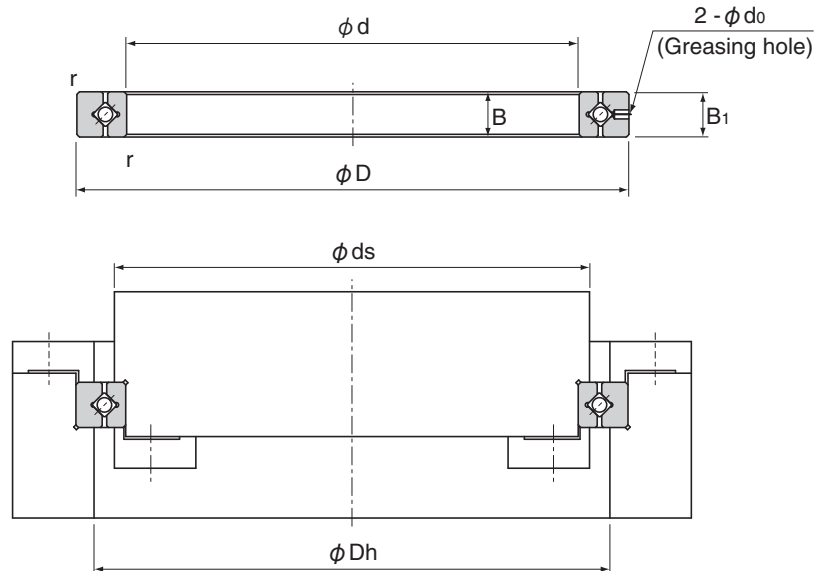
● Comparison of cross section and mass, 50 mm inner diameter



Model No.	RAU5005	RA5008
Cross-sectional area	27.5mm <sup>2</sup>	64mm <sup>2</sup>
Mass	32g	80g



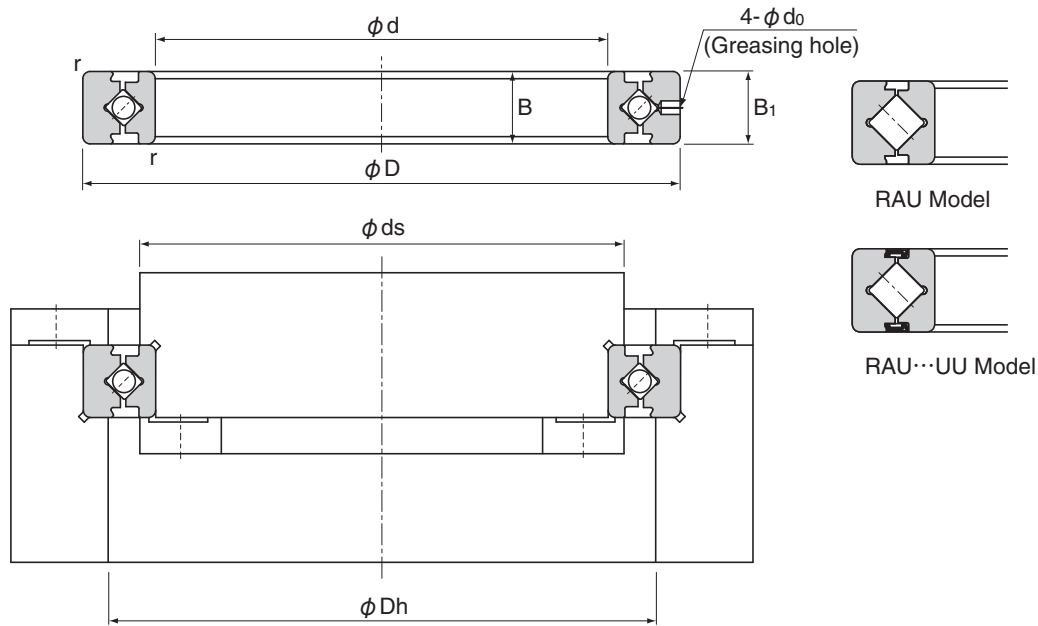
## Model RAU (Small-diameter thin type. Width: 5mm)



Unit: mm

Model No.	Main dimensions						Shoulder height		Basic Load Rating (Radial)		Mass
	Inner diameter	Outer diameter	Roller Pitch Circle diameter	Width	Greasing Hole	$r_{min}$	ds (max)	Dh (min)	C [kN]	Co [kN]	[kg]
	d	D	dp	B, B <sub>1</sub>	d <sub>o</sub>						
RAU1005	10	21	14.7	5	1	0.15	12.5	17	1.12	0.809	0.009
RAU1505	15	26	19.7	5	1	0.15	17.5	22	1.32	1.10	0.012
RAU2005	20	31	24.7	5	1	0.15	22.5	27	1.49	1.40	0.015
RAU3005	30	41	34.7	5	1	0.15	32.5	37	1.89	2.14	0.021
RAU4005	40	51	44.7	5	1	0.15	42.5	47	2.14	2.74	0.027
RAU5005	50	61	54.7	5	1	0.15	52.5	57	2.43	3.49	0.032
RAU6005	60	71	64.7	5	1	0.15	62.5	67	2.63	4.09	0.038
RAU7005	70	81	74.7	5	1	0.15	72.5	77	2.81	4.68	0.044
RAU8005	80	91	84.7	5	1	0.15	82.5	87	3.05	5.43	0.050
RAU9005	90	101	94.7	5	1	0.15	92.5	97	3.19	6.03	0.056
RAU10005	100	111	104.7	5	1	0.15	102.5	107	3.37	6.63	0.061

**Model RAU** (Interchangeable with model RA. Width: 8mm, 13mm)



Unit: mm

Model No.	Main dimensions						Shoulder height		Basic Load Rating (Radial)		Mass [kg]
	Inner diameter	Outer diameter	Roller Pitch Circle diameter	Width	Greasing Hole	$r_{min}$	ds (max)	Dh (min)	C [kN]	Co [kN]	
	d	D	dp	B, B <sub>1</sub>	d <sub>0</sub>						
RAU5008	50	66	57	8	1.5	0.5	53.5	60.5	5.10	7.19	0.08
RAU6008	60	76	67	8	1.5	0.5	63.5	70.5	5.68	8.68	0.09
RAU7008	70	86	77	8	1.5	0.5	73.5	80.5	5.98	9.80	0.10
RAU8008	80	96	87	8	1.5	0.5	83.5	90.5	6.37	11.3	0.11
RAU9008	90	106	97	8	1.5	0.5	93.5	100.5	6.76	12.4	0.12
RAU10008	100	116	107	8	1.5	0.5	103.5	110.5	7.15	13.9	0.14
RAU11008	110	126	117	8	1.5	0.5	113.5	120.5	7.45	15	0.15
RAU12008	120	136	127	8	1.5	0.5	123.5	130.5	7.84	16.5	0.17
RAU13008	130	146	137	8	1.5	0.5	133.5	140.5	7.94	17.6	0.18
RAU14008	140	156	147	8	1.5	0.5	143.5	150.5	8.33	19.1	0.19
RAU15008	150	166	157	8	1.5	0.5	153.5	160.5	8.82	20.6	0.20
RAU16013	160	186	172	13	2	0.8	165	179	23.3	44.9	0.59
RAU17013	170	196	182	13	2	0.8	175	189	23.5	46.5	0.64
RAU18013	180	206	192	13	2	0.8	185	199	24.5	49.8	0.68
RAU19013	190	216	202	13	2	0.8	195	209	24.9	51.5	0.69
RAU20013	200	226	212	13	2	0.8	205	219	25.8	54.5	0.71

## ● Accuracy standards

### ● Rotational accuracy

- Rotational Accuracy of the Inner Ring

Unit:  $\mu\text{m}$

Nominal dimension of bearing inner diameter (d) (mm)		Radial runout tolerance of inner ring				Axial runout tolerance of inner ring			
Above	Or less	Grade 0	Grade P6	Grade P5	Grade P4	Grade 0	Grade P6	Grade P5	Grade P4
—	18	10	—	—	—	10	—	—	—
18	40	13	—	—	—	13	—	—	—
40	65	13	10	5	4	13	10	5	4
65	80	15	10	5	4	15	10	5	4
80	100	15	13	6	5	15	13	6	5
100	120	20	13	6	5	20	13	6	5
120	140	25	18	8	6	25	18	8	6
140	180	25	18	8	6	25	18	8	6
180	200	30	20	10	8	30	20	10	8

- Rotational Accuracy of the Outer Ring

Unit:  $\mu\text{m}$

Nominal dimension of bearing outer diameter (D) (mm)		Radial runout tolerance of outer ring			Axial runout tolerance of outer ring		
Above	Or less	Grade 0	Grade P5	Grade P4	Grade P6	Grade P5	Grade P4
—	65	13	—	—	13	—	—
65	80	13	8	5	13	8	5
80	100	15	10	6	15	10	6
100	120	15	10	6	15	10	6
120	140	20	11	7	20	11	7
140	180	25	11	7	25	11	7
180	200	25	15	10	25	15	10
200	250	30	15	10	30	15	10

- The rotational accuracy of model RAU (Small-diameter thin type. Width: 5mm) is only available in normal grade (grade 0).

### ● Dimensional accuracy

Unit:  $\mu\text{m}$

Basic dimension d, D [mm]		Bearing inner diameter: Dimensional tolerance of dm		Bearing outer diameter: Dimensional tolerance of Dm		Bearing width: Dimensional tolerance of B, B <sub>1</sub>	
Above	Or less	Upper limit	Lower limit	Upper limit	Lower limit	Upper limit	Lower limit
—	18	0	-8	—	—	0	-120
18	30	0	-10	0	-9	0	-120
30	50	0	-12	0	-11	0	-120
50	80	0	-15	0	-13	0	-120
80	120	0	-20	0	-15	0	-120
120	150	0	-25	0	-18	0	-120
150	180	0	-25	0	-25	0	-120
180	250	0	-30	0	-30	0	-120

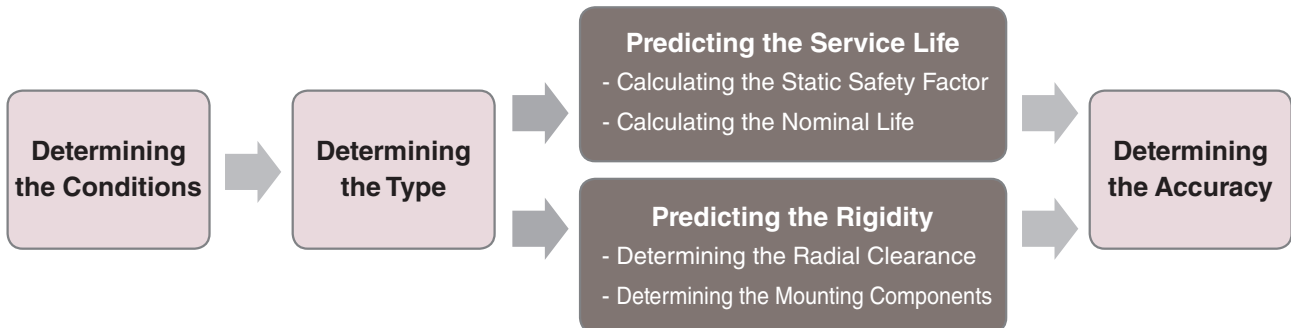
- dm and Dm represent the arithmetic averages of the maximum and minimum diameters obtained by measuring the inner and outer diameters of the bearing at two points.

### ● Radial clearance standard

Unit:  $\mu\text{m}$

Roller Pitch circle diameter (dp) [mm]		CC0		C0	
Above	Or less	Min.	Max.	Min.	Max.
—	18	—	—	0	15
18	30	—	—	0	15
30	50	—	—	0	15
50	80	-8	0	0	15
80	120	-8	0	0	15
120	140	-8	0	0	15
140	160	-8	0	0	15
160	180	-10	0	0	20
180	200	-10	0	0	20
200	225	-10	0	0	20

## ● Model selection



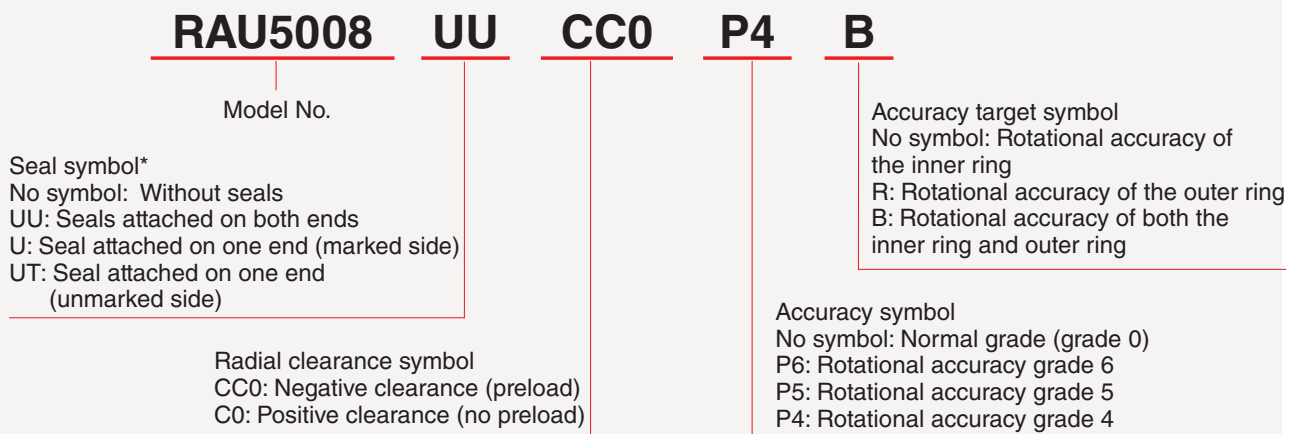
For details, see the THK technical support site.  
There you can also download 2D and 3D CAD data.

For details, visit THK at [www.thk.com](http://www.thk.com)

\*Product information is updated regularly on the THK website.

## ● Model composition

### Model Number Coding



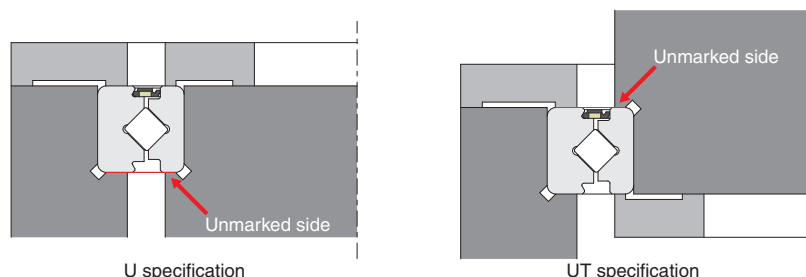
Considerations for model RAU (Small-diameter thin type. Width: 5mm)

\*Seals are not available.\* The only radial clearance available is C0.\* The only accuracy available is normal grade (grade 0).

### \*Precautions for selecting the seal for one end

For the cross-roller ring, the unmarked side is the die reference surface, so THK recommends assembling the unmarked side on the mounting reference surface of the rotational axis. Select the seal orientation according to the specification.

Example: Inner ring rotation specification/If the seal is on the upper side





## Micro Cross-Roller Ring Model RAU



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